

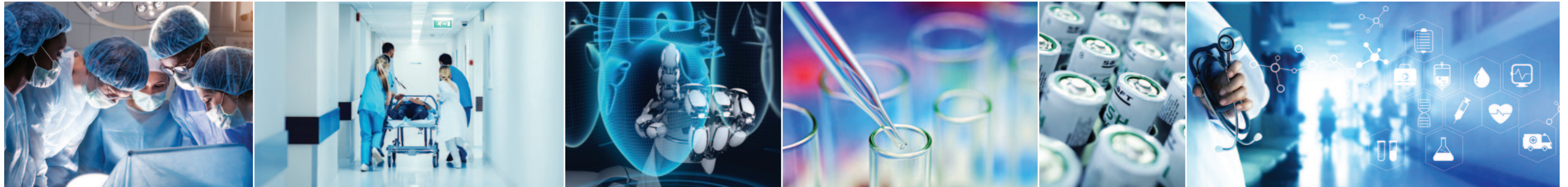
Soft batteries for medical devices

Critical power when you need it most



When power failure is not an option

Your solution for medical applications



Doctors, nurses and first responders should not need to worry whether critical medical equipment will operate properly. That's why Saft's battery solutions for medical devices are made to meet the toughest standards of reliability, durability and efficiency.

The challenge for medical OEMs: keeping costs down

Medical device OEMs and their suppliers share certain core needs in a highly competitive market. Batteries integrated in their devices must:

- Have a low total cost of ownership (TCO), with high reliability, no maintenance and long life
- Be user friendly, and safe to use
- Rely on advanced medical know-how and integrate innovative technologies
- Be customized for the specific application, and compliant with all regulatory requirements
- Have global sourcing, to enable device manufacturing anywhere in the world

About Saft

The world's leading designer and manufacturer of advanced technology batteries, Saft serves a diversified group of industries, including aviation, space, defense, rail, telecoms, civil electronics and industrial standby. We offer a broad portfolio of technologies, including nickel, primary lithium and lithium-ion. Strongly committed to innovation, Saft invests 10 % of sales in R&D, with research programs in electrochemistry, new materials, and many others. With more than 100 years' experience, the company has a strong global presence.

Saft offers the widest portfolio of technologies for medical applications, including a full range of primary lithium and lithium-ion products. Saft's high-power, high-energy batteries feature unparalleled performance with very long lifetime (> 20 years), the broadest environmental conditions, high reliability and unquestionable safety.

Deep medical expertise

With over 30 years of experience in the medical field, Saft has a proven track record in an extensive range of medical devices. Saft has an in-depth knowledge of medical standards and regulations.

Tailored solutions

Because every customer's needs are different, Saft tailors each solution. Saft can model your solution, provide performance predictions, carry out end testing, and much more. Then, with a system design capability, Saft can act as project manager and deliver turnkey solutions for battery management software design and for electronics, thermal and mechanical applications. We integrate advanced, smart features such as State-Of-Charge (SOC) and State-Of-Health (SOH) in our solutions.

A strong commitment to innovation

As the world leader in advanced batteries, Saft invests heavily in R&D. The company has a unique community of scientists, with 30 PhDs and more than 450 engineers who collaborate with customers in joint innovations.

Global reach, and a secure supply chain

Saft has a global presence, with manufacturing in North America, Europe and Asia. Our clients are in close proximity to our development centers.

A proven track record, and proven technologies

Saft batteries have been integrated in a broad range of advanced medical devices.

- Prosthetic devices
- Neurostimulation
- Remote monitoring
- Critical care
- Respiratory assistance
- Defibrillators
- Operating theater
- Patient mobility

Driving the market for medical device batteries



An aging population



Mobility needs



Connectivity needs



Robotic technologies



Saft: the right choice for patient care



In the healthcare field, batteries have become an essential component in the delivery of medical services – in the hospital, for emergency medical services, and for home care. Saft has a proven track record in providing reliable, long-life, advanced battery solutions used by healthcare providers around the world.

Home care

- Remote patient monitoring
- Wearable devices
- Neurostimulation
- E-health

Prosthetic devices

- Robotic prostheses
- Artificial heart

Emergency care

- AED
- Respiratory assistance

Patient care

- Drug delivery
- Critical care

Patient monitoring

- Medical carts
- Point-of-care testing

Patient mobility

- Gurneys
- Lifts
- Beds
- Wheelchairs

Operating theater

- Surgical tools
- Operating tables
- Lights

Patient diagnosis

- Imaging

Infrastructure

- Centralized UPS

CUSTOMER STORIES

Surviving end-stage heart failure



For patients with end-stage heart failure – many waiting for a transplant – a ventricular assist device (VAD) is vital for pumping blood through the body. Berlin Heart offers three devices: the implantable INCOR® and the external EXCOR® Adult for adult patients, and the EXCOR® Pediatric, which is the only VAD available and approved for pediatric patients. Berlin Heart VADs rely on Saft's rechargeable Li-ion MP batteries.

"Saft batteries are mission critical for our VADs: they provide totally reliable mobile power", said Marketing Team Leader at Berlin Heart. "Mobility is also an important feature for our patients; it lets them enjoy an improved quality of life, as they can walk around freely."

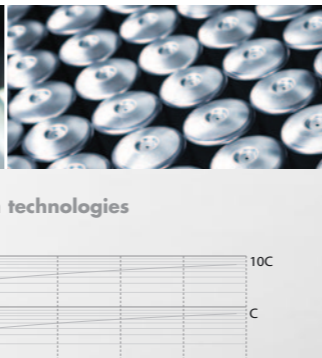
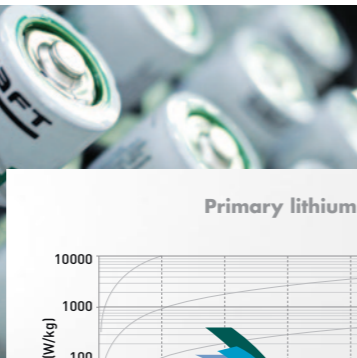
Powering a smart operating table



For physicians and nurses working long shifts in the operating theater, a reliable operating table is crucial for patient outcome. STERIS developed the Gmax™ transfer operating table, which relieves strain on the clinical team through advanced ergonomics. The Gmax™ integrates Saft's rechargeable Li-ion battery solution, giving the operating table autonomous power for a complete 8-hour shift on a single charge.

"Saft's MP batteries have proved to be ideal thanks to their compact, high-quality, safety-certified construction, which delivers the key combination of performance, reliability and long life", said Jean-Marie L'Hégat, R&D Director for STERIS.

Saft: providing value for medical applications



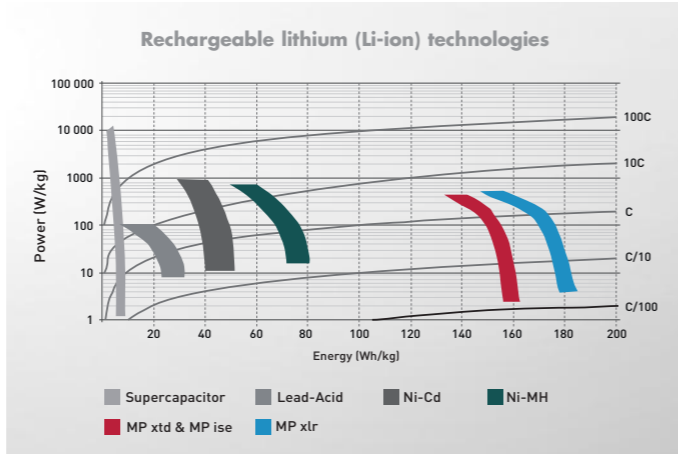
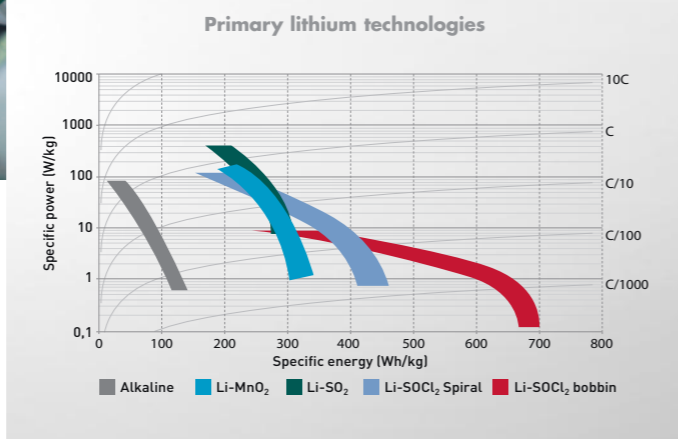
Saft is fully compliant with all key standards

Fully proven in medical applications
Compliant with UL 1642, IEC 60086-4, IEC 62133

A specialist in electrochemistry, Saft offers the widest portfolio of technologies, including primary lithium and rechargeable batteries in both cylindrical and prismatic form. Together with its battery packs and systems, Saft offers a fully integrated value chain for all your medical needs.

A fully integration value chain

Saft has vast experience and a proven track record in designing and producing battery packs and systems. We provide and integrate all components, including hardware, software, HMI, safety devices, electronics, chargers, and thermal, electrical and mechanical subsystems.



Committed to end-to-end customer support

Saft provides a wide array of support and services, both before you buy and after, so you can be sure of having a robust, reliable and well-maintained solution over a long service life.



CUSTOMER STORIES

Reviving a victim of cardiac arrest



When there is a sudden cardiac arrest emergency, first responders need a reliable automated external defibrillator (AED) to resuscitate the victim. Since the mid-1990s, Cardiac Science has integrated Saft Li-SO₂ technology into their industry-leading Powerheart® AEDs, which are powered by proprietary medical-grade batteries.

"Our AEDs are stored in vehicles or used at fire scenes where temperature conditions are not ideal", said Thomas Penn, VP of R&D and Program Management at Cardiac Science Corporation. "In these environments, Saft's Li-SO₂ battery is the ideal solution, with its excellent performance, long shelf life and high pulse capability."

Providing power 24/7 for mobile medical carts



Mobile medical carts are vital for day-to-day hospital operations, both to ensure patient care and comply with EHR requirements. Yet most carts today rely on Li-ion cells from the consumer market that can't meet the intensive operational demands of mobile medical applications. To remedy this, Saft is partnering with the Dutch start-up, DCPower4C to develop the Circadian® System, which integrates Saft's innovative MP xtd Li-ion cell technology in a lightweight, universal hot-swap battery system that provides reliable power 24/7.

"With Saft's Li-ion cells as an integral part of our Circadian® System, hospitals can achieve a significant reduction in TCO and improve our ROI on going digital", said Martyn Sly-Jex, Sales Director at DCPower4C.

Saft solutions: the widest portfolio for your medical needs

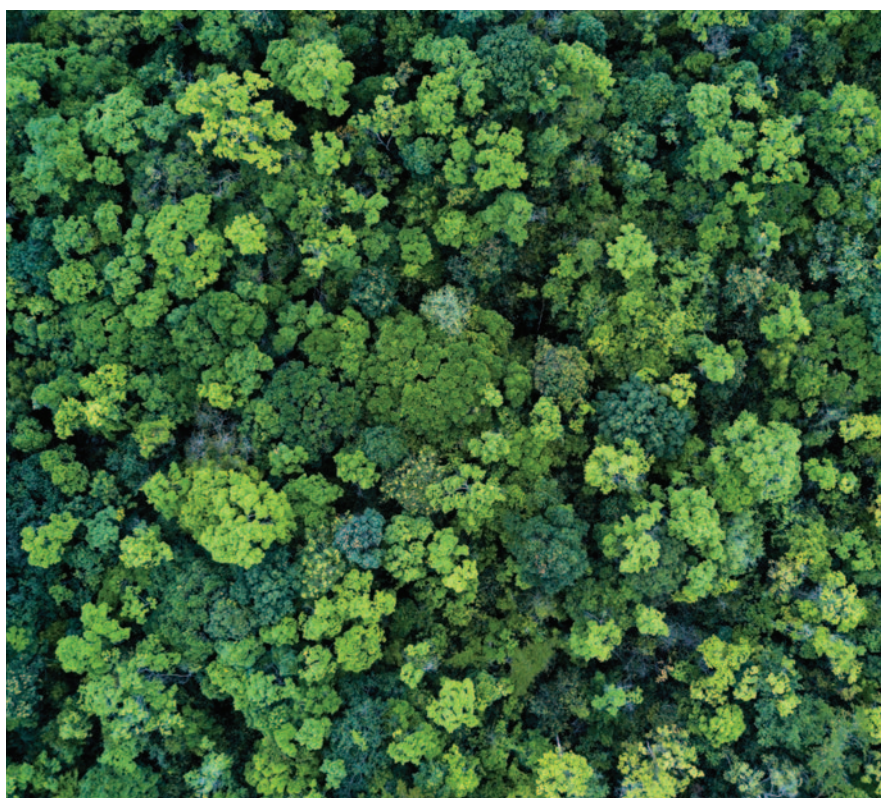
Features	Saft's solutions	Technology	Home care	Prosthetic devices	Emergency care	Patient care	Patient monitoring	Patient mobility	Operating theater
LONG LIFE	LS / LSH range	Primary Li-SOCl ₂	■			■	■		
HIGH POWER	LO range	Primary Li-SO ₂	■		■				
ENERGY & POWER	LM / M range	Primary Li-MnO ₂			■	■	■		■
HIGH ENERGY	MP xtr range	Rechargeable NMC / NCA	■	■				■	
LONG LIFE	MP xtd range	Rechargeable NMC			■	■	■	■	
ATEX COMPLIANT	MP ise range	Rechargeable NMC							■

Saft is committed to the highest standards of environmental stewardship

As part of this environmental commitment, Saft prioritises the use of recycled raw materials over virgin raw materials in all manufacturing processes. We also strive, year on year, to reduce air and water emissions from our plants, as well as minimizing water usage, reducing consumption of fossil energy consumption and associated CO₂ emissions, and ensuring that all our customers have access to recycling solutions for their

spent batteries. To facilitate the end-of-life collection and recycling of industrial batteries, including our nickel & lithium-based technologies, Saft has developed well-established partnerships with collection companies in most EU countries, in North America and in many other countries worldwide. This collection network receives spent batteries from our customers and dispatches them to fully approved recycling facilities, in compliance

with the laws governing trans-boundary waste shipments. This collection network is currently undergoing minor adaptations to meet the requirements of the EU batteries directive. A list of our battery collection points is available on our web site. In other countries, Saft will assist anyone using our batteries in finding environmentally sound recycling solutions. Please contact your sales representative for further information.



Saft
26 Quai Charles Pasqua
92300 Levallois-Perret
Tel : +33 1 58 63 16 00
www.saftbatteries.com
lithiumsales.fr@saftbatteries.com

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